LISTING OF CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method for melting inorganic materials~~, glasses and/or glass-ceramics~~ in a melting unit with cooled walls, ~~in which material to be melted is fed to the melting unit and heated by supplying heating energy, wherein~~ comprising:

selecting a ~~the~~ temperature T_{eff} at which ~~the~~ an energy consumption per unit weight of the inorganic materials ~~to be melted, given a suitably adapted throughput,~~ is at a minimum ~~is determined~~,

selecting a ~~the~~ temperature of ~~the~~ a melt in the melting unit ~~is selected in such a way as to be~~ in a range from T_{eff} - 20% to T_{eff} + 20%, and

selecting a ~~the~~ throughput ~~is selected in such a way as~~ to be adapted to ~~the~~ a required residence time.

2. (Currently amended) The method as claimed in claim 1, wherein the temperature T_{eff} is given by

$$(1)\quad dE_{tot}/dT\Big|_{T=T_{eff}} = 0 = dE_N/dT\Big|_{T=T_{eff}} + dE_V/dT\Big|_{T=T_{eff}}$$

where E_N denotes ~~the~~ a useful heat per unit weight of the inorganic materials ~~to be melted~~ and E_V denotes the energy loss per unit weight of the inorganic materials ~~to be melted~~.

3. (Currently amended) The method as claimed in claim 2, wherein ~~the derivative of~~ the useful heat per unit weight ~~of material to be melted~~ has a derivative according to temperature ~~is~~ given by $dE_n/dT = c_p$, where c_p denotes ~~the~~ a specific heat capacity of the melt.

4. (Currently amended) The method as claimed in ~~claims 2 and 3, wherein the derivative of~~ claim 2, wherein the energy loss per unit weight ~~of melting material, E_V~~ has a derivative according to temperature ~~is~~ given by $dE_V/dT = k\ F_0\ 1/\rho\ \tau_0\ e^{+E/T} + k\ T\ F_0\ 1/\rho\ \tau_0\ (-E/T^2)\ e^{+E/T}$, where k denotes ~~the~~ a total transfer of heat through the walls of the melting unit, $F_0 = F/V$ denotes ~~the~~ a surface to volume ratio of the melt, ρ denotes ~~the~~ a density of the melt, τ_0 denotes the required residence time at a reference temperature T_0, and E denotes a constant corresponding to a characteristic activation temperature.

5. (Currently amended) The method as claimed in ~~one of the preceding claims, wherein~~ claim 1, further comprising feeding thermal energy ~~is fed~~ directly to the melt.

6. (Original) The method as claimed in claim 5, wherein the melt is additionally mixed in the melting unit.

7. (Original) The method as claimed in claim 6, wherein the melt is agitated using a stirrer and/or by bubbling.

8. (Currently amended) The method as claimed in ~~either of claims 6 and 7, wherein~~ claim 6, further comprising generating a convective flow ~~is generated~~ in the melt.

9. (Currently amended) The method as claimed in claim 8, wherein [[a]] the convective flow is produced by setting a viscosity of [[<]] less than 10^3 dPas~~, preferably of < 10^2 dPas,~~ and a melt temperature difference between an inner region of the melt and an outer region of the melt of [[>]] greater than 150 K~~, preferably > 250 K~~.

10. (Currently amended) The method as claimed in ~~claims 5 to 9, wherein~~ claim 5, further comprising supplying the inorganic materials ~~to be melted is supplied~~ in the form of a batch, which is placed onto ~~the~~ a surface of the melt.

11. (Cancelled).

12. (Currently amended) The method as claimed in ~~claims 5 to 12~~ claim 10, wherein the batch is added in the form of pellets.

13. (Currently amended) The method as claimed in ~~one of the preceding claims, in which~~ claim 1, further comprising refining the melting ~~material is refined~~.

14. (Currently amended) The method as claimed in claim 13, ~~wherein a~~ further comprising producing a convective flow ~~is produced~~ in the melt.

15. (Currently amended) The method as claimed in claim 14, wherein [[a]] the convective flow is produced by setting a viscosity of ~~< 10^3 dPas, preferably of <~~ less than 10^2 dPas and a melt temperature difference between an inner region of the melt and an outer region of the melt of ~~> 150 K, preferably >~~ greater than 250 K.

16. (Currently amended) The method as claimed in claims 13 ~~to 15~~, ~~wherein~~ further comprising introducing molten material ~~is introduced~~ into a crucible from one side of the crucible at ~~the~~ a melt bath surface and ~~is discharged again~~ discharging the molten material on an opposite side at the melt bath surface.

17. (Currently amended) The method as claimed in ~~one of the preceding claims~~ claim 1, wherein the inorganic materials ~~to be melted is~~ are refined using ~~high-temperature~~ a refining agent.

18. (Currently amended) The method as claimed in ~~one of the preceding claims, wherein melting~~ claim 1, further comprising continuously feeding and removing the inorganic materials ~~is continuously fed~~ to and ~~removed~~ from the melt.

19. (Currently amended) The method as claimed in claim~~s~~ 1 ~~to 12~~, wherein the temperature T_{eff} is determined for the melting-down of a batch.

20. (Original) The method as claimed in claim 19, wherein the temperature T_{eff} is determined for a melt which is additionally mixed.

21. (Currently amended) The method as claimed in claim 19, wherein the temperature T_{eff} is determined for a melt which has a viscosity of [[<]] less than 10^3 dPas~~, preferably of < 10^2 dPas~~ and is melted in a unit at which a temperature difference in the melt between ~~the~~ an inner region of the melt and ~~the~~ an outer region of the melt [[is >]] of greater than 150 K~~, preferably > 250 K~~.

22. (Currently amended) The method as claimed in claim~~s~~ 1 ~~to 4 and 13 to 17~~, wherein the temperature T_{eff} is determined for ~~the~~ refining ~~of~~ the melt.

23. (Currently amended) The method as claimed in claim 22, wherein the temperature T_{eff} is determined for a melt which has a viscosity of [[<]] less than 10^3 dPas~~, preferably of < 10^4 dPas~~ and is melted in a unit at which a temperature difference in the melt between ~~the~~ an inner region of the melt and ~~the~~ an outer region of the melt [[is >]] of greater than 150 K~~, preferably > 250 K~~.

24. (Currently amended) The method as claimed in claim~~s~~ 22 ~~and 23~~, wherein the temperature T_{eff} is determined for a melt in which molten material is introduced into a crucible from one side of the crucible at ~~the~~ a melt bath surface and is discharged again on ~~the~~ an opposite side of the crucible at the melt bath surface.

25. (Currently amended) The method as claimed in claim~~s 1 to~~ 24, ~~wherein~~ further comprising feeding thermal energy ~~is fed~~ directly to the melt.

26. (Currently amended) The method as claimed in claim 25, wherein the thermal energy is fed to the melt by direct conductive heating.

27. (Currently amended) The method as claimed in claim 25, wherein the thermal energy is fed to the melt by direct inductive heating.

28. (Currently amended) The method as claimed in claims~~s~~ 1 ~~to 27~~, wherein at least one region of the melt is heated to more than 1 700°C.

29. (Currently amended) The method as claimed in ~~one of the preceding claims~~ claim 2, wherein the temperature of at least one region of the melt is selected to be less than or equal to a temperature at which the useful heat and the energy loss per unit weight ~~of the material to be melted~~ are equal.

30 and 31. (Cancelled).

32. (Currently amended) The method as claimed in ~~one of the preceding claims, in which~~ claim 1, wherein the required residence time comprises ~~the~~ a melt-down time.

33. (Currently amended) The method as claimed in ~~one of the preceding claims, in which~~ claim 1, wherein the required residence time comprises ~~the~~ a refining time.

34. (Currently amended) An apparatus for melting inorganic materials, ~~glasses and glass-ceramics, for carrying out the method as claimed in one of claims 1 to 33, which apparatus comprises~~ comprising:

a melting unit with cooled walls,

a device for supplying material to be melted to the melting unit, ~~and~~

a device for the direct heating of the material to define a melt,

~~and which apparatus also includes~~

a device for setting a temperature which is at least $T_{eff} - 20\%$ to $T_{eff} + 20\%$ in at least one region of the melt, the temperature T_{eff} being given by the temperature at which ~~the~~ an energy consumption per unit weight of the material to be melted, with a throughput ~~which is suitably adapted to the~~ a required residence time ~~required~~ at a given temperature~~, is at a minimum~~, and

a device for adapting the relative throughput of material to be melted to the required residence time in the melt.

35. (Original) The apparatus as claimed in claim 34, wherein the melting unit with cooled walls comprises a skull crucible.

36. (Currently amended) The apparatus as claimed in claim 34 ~~or 35~~, ~~which includes~~ further comprising a stirrer for agitating the melt.

37. (Currently amended) The apparatus as claimed in ~~one of~~ claims 34 ~~to 36~~, ~~which includes~~ further comprising at least one nozzle for introducing bubbling gas to the melt.

38. (Currently amended) The apparatus as claimed in ~~one of~~ claims 34 ~~to 37~~, wherein the device for the direct heating of the melt comprises a device for the conductive heating of the melt.

39-46. (Cancelled).

47. (Currently amended) ~~The~~ A glass comprising ~~as claimed in claim 46, preferably produced by the method as claimed in one of claims 1 to 33, wherein the~~ a ratio of Sn^{2+} to Sn_T ~~has~~ having a value of greater than 0.25~~, preferably greater than 0.35, particularly preferably greater than 0.45~~.

48. (Currently amended) [[A]] The glass ~~product producible by the method~~ as claimed in ~~one of claims 1 to 33~~ claim 47, wherein the value is greater than 0.35.

49. (Currently amended) The glass ~~product~~ as claimed in claim ~~48, preferably produced by the method as claimed in one of claims 1 to 33~~ 47, wherein the ~~ratio of Sn^{2+} to Sn_T has a~~ value ~~of greater than 0.25, preferably greater than 0.35, particularly preferably~~ is greater than 0.45.